



**RURAL CENTER FOR
AIDS/STD PREVENTION**

INDIANA UNIVERSITY
School of Public Health
Bloomington

Syringe Exchange: Indicators of Need & Success

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The recent outbreak of HIV in southern Indiana among injection drug users brings attention to the lack of a strong public health system in these communities, and the need for syringe exchange programs (SEPs). SEPs are part of a comprehensive public health response to HIV and Hepatitis C.¹ Key indicators of need for SEPs include reported Hepatitis C, and injection drug use.

Hepatitis C & Heroin Use: Surrogate Indicators

Hepatitis C virus (HCV) has increased in Indiana since 2011. There have been 15,709 reported cases of acute and chronic HCV from 2011-2013.² Hepatitis C is the strongest indicator of need for syringe exchange because 50-80% of people who inject drugs become infected within 5 years of initiating injection drug use.³ According to CDC, 50-90% of people with HCV are co-infected with HIV.

Heroin Use or Dependence at Substance Abuse Treatment Admission.

Hoosier use and dependence on heroin increased significantly from 2001 to 2012 (most recent data). Of those admitted for substance abuse treatment, 9% reported heroin dependence and 11.1% reported heroin use in 2012.³ These data are supplemental and conservative indicators of need for syringe exchange because they do not represent the total population of injection drug users, and only include admissions for state-funded substance abuse treatment.

Prescription Drug Overdose Mortality. Nationally, there is evidence of an increase of HCV among young, heroin-injecting drug users who first used oral prescription opioid drugs.⁴ Prescription overdose mortality rates can further inform communities where prescription drugs are injected.

SEPs are cost effective, because they reduce Hepatitis C and HIV among injection drug users. Evidence-based programs link SEPs tightly with HIV testing, antiretroviral treatment and substance abuse treatment.

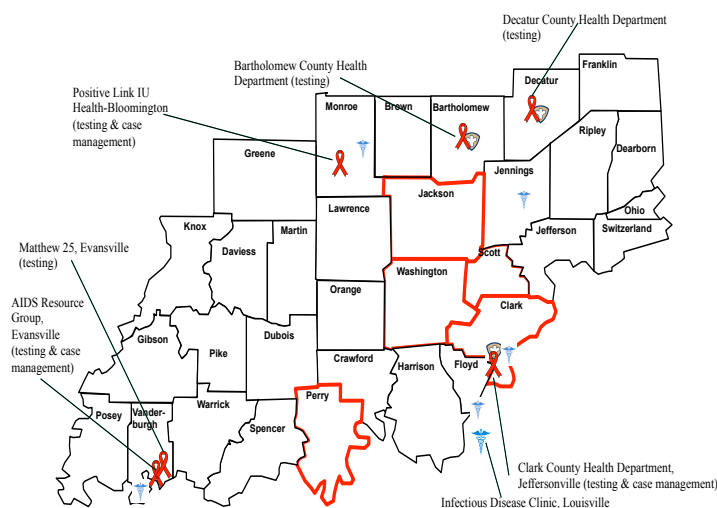
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Public Health System: Necessary for SEP Success

Preventive health services such as HIV/HCV screening, HIV/HCV treatment, and substance abuse treatment are necessary components to SEPs. SEP workers can be critical 'bridges' between injection drug users and the health system.

System investment is necessary for SEP success. Southern Indiana counties have limited access to HIV testing, HIV treatment and affordable substance abuse treatment (see inset). Temporary HIV testing and treatment services are now available in Scott County; however, sustainability is unclear.

HIV Testing, Case Management and Treatment Resources in Region



Acute and Chronic Hepatitis C in Indiana Counties 2011-2013

An analysis of publicly available reported cases of acute and chronic HCV by county, as well as supplemental indicators of heroin and prescription drug overdose mortality suggests the following:

- **HCV is the most robust surrogate indicator of need for syringe exchange programming (SEP):** Both rural and urban communities are affected by HCV. Those in **quartile 4** merit attention to their public health systems to assure early HCV and HIV screening; and linkage to HIV, HCV and substance abuse treatment. (See attached table)
 - Rates of HCV (cases per 100,000 population) indicate more about the impact of HCV in communities than case counts do; and they allow comparison between and among communities.
- **Supplemental indicators also indicate need for SEP.** While not as strong as HCV cases and rates, these indicators include: 1) reported heroin use and dependence at admission to state-funded substance abuse treatment, and 2) death rates from prescription drug overdose. They do not represent the population of injection drug users, but can point to emerging need; particularly in communities aware of injection drug use or, like Scott County, when community members inject prescription drugs. (Supplemental indicators by county are available from the Rural Center for AIDS/STD Prevention at Indiana University).
- **Early Warning Potential:** Surrogate and supplemental indicators can be used to guide prevention and treatment planning for greatest health protection.
 - Scott County, the center of the current HIV outbreak, ranks among the top 3 counties for rates of acute and chronic hepatitis C.
 - Wayne, Fayette and Henry counties, also in quartile 4, experienced a rapid increase of acute HCV among young injection drug users in early in 2011.⁵

Methodology

The state of Indiana publishes combined reported cases for acute and chronic HCV by year for each county. While HCV case rates are usually calculated for acute HCV, both types are associated with HIV. Thus, rates for the combined acute and chronic reported cases were calculated per 100,000 population to allow for county comparison.

Thresholds for supplemental indicators were identified for reported heroin use or dependence at substance abuse treatment admission for 2014. Counties with ≥ 100 (count) or $\geq 20\%$ of total substance abuse treatment admissions reporting heroin use or dependence were recommended for SEP consideration. In many cases, quartile ranking for these counties was lower because of county population size.

References:

1. Centers for Disease Control and Prevention. Syringe Exchange Programs United States -2008. *Morbidity and Mortality Weekly Report* 2010 59(45);1488-1491.
2. Indiana State Department of Health. Chronic and Acute Hepatitis C rates by county (Maps) 2011, 2012, 2013.
3. Center for Health Policy, IUPUI. *The Consumption and Consequences of Alcohol, Tobacco and Drugs in Indiana: A State Epidemiologic Profile* 2014.
4. Kleens RM, Hu DJ, Jiles R, Holmberg SD. Evolving epidemiology of hepatitis C virus in the United States. *Clin Infect Dis* 2012;55(S1):S3-9.
5. Gross BM, Emergence of Acute Hepatitis C in Young Injection Drug Users. Presentation at the 2013 Hepatitis Technical Assistance Meeting hosted by the National Alliance of State and Territorial AIDS Directors.



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| Cases and Rates of Acute and Chronic Hepatitis C by Indiana County 2011-2013 (Quartiles based on 3-year county median rate) | | | | | | | |
|--|--|--|-------------------|--|-------------------|--|-------------------|
| | 3-year median case rate (per 100,000 population) | 2011 | | 2012 | | 2013 | |
| | | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases |
| Quartile 1 | | | | | | | |
| Benton | - | - | - | - | - | - | - |
| Newton | - | - | - | - | - | - | - |
| Ohio | - | - | - | - | - | 116.0 | 7 |
| Warren | - | - | - | 95.4 | 8 | - | - |
| Whitley | 18.1 | 15.0 | 5 | 33.1 | 11 | 18.1 | 6 |
| Wells | 19.9 | 21.6 | 6 | 18.1 | 5 | - | - |
| Hamilton | 21.5 | 21.5 | 61 | 28.0 | 81 | 15.2 | 45 |
| Steuben | 26.4 | 26.4 | 9 | 26.4 | 9 | 17.5 | 6 |
| Noble* | 27.4 | 29.5 | 14 | 16.9 | 8 | 27.4 | 13 |
| White | 28.7 | - | - | 24.6 | 6 | 32.8 | 8 |
| Adams | 28.8 | 32.0 | 11 | 23.3 | 8 | 28.8 | 10 |
| Posey | 31.3 | 31.2 | 8 | 31.3 | 8 | 31.4 | 8 |
| Kosciusko | 32.1 | 27.1 | 221 | 43.8 | 34 | 32.1 | 25 |
| Carroll | 32.3 | - | - | 39.8 | 8 | 24.9 | 5 |
| Johnson* | 32.5 | 32.5 | 46 | 41.8 | 60 | 30.2 | 44 |
| Huntington | 34.2 | 37.7 | 14 | 34.2 | 13 | 16.3 | 6 |
| LaGrange | 34.5 | - | - | 34.5 | 13 | - | - |
| Dubois | 35.5 | 35.5 | 15 | 38.0 | 16 | 28.4 | 12 |
| Marshall | 36.2 | 36.2 | 17 | 36.2 | 17 | 19.1 | 9 |
| Elkhart | 36.3 | 36.3 | 72 | 43.7 | 87 | 25.4 | 51 |
| DeKalb | 37.9 | 54.2 | 23 | 37.9 | 16 | 33.1 | 14 |
| St. Joseph* | 38.2 | 38.2 | 102 | 60.0 | 160 | 37.9 | 101 |
| Porter | 38.7 | 38.7 | 64 | 45.9 | 76 | 25.8 | 43 |
| Quartile 2 | | | | | | | |
| Pike | 39.5 | 39.2 | 5 | 47.0 | 6 | 39.5 | 5 |
| Hancock | 41.2 | 41.2 | 29 | 53.8 | 38 | 32.4 | 23 |
| Fountain | 41.5 | 46.7 | 8 | 35.1 | 6 | 41.5 | 7 |
| Jasper | 41.9 | 41.9 | 14 | 47.8 | 16 | 36.0 | 12 |
| Bartholomew | 43.1 | 55.4 | 43 | 43.1 | 34 | 41.5 | 33 |
| Daviess | 43.2 | 68.1 | 22 | 34.2 | 11 | 43.2 | 14 |
| Vermillion | 43.5 | 43.5 | 7 | 43.9 | 7 | 37.8 | 6 |
| Knox | 44.7 | 46.8 | 18 | 44.7 | 17 | 34.2 | 13 |
| Tippecanoe | 44.9 | 53.9 | 93 | 44.9 | 80 | 24.9 | 45 |
| Orange | 45.7 | 35.2 | 7 | 45.7 | 9 | 50.6 | 10 |
| Gibson | 47.7 | 47.7 | 16 | 38.9 | 13 | 47.7 | 16 |
| Spencer | 48.0 | 52.2 | 11 | 33.6 | 7 | 48.0 | 10 |
| Fulton | 48.7 | - | - | 43.6 | 9 | 53.8 | 11 |

| Cases and Rates of Acute and Chronic Hepatitis C by Indiana County 2011-2013 (Quartiles based on 3-year county median rate) | | | | | | | |
|--|--|--|-------------------|--|-------------------|--|-------------------|
| | 3-year median case rate (per 100,000 population) | 2011 | | 2012 | | 2013 | |
| | | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases |
| Quartile 2 (continued) | | | | | | | |
| Pulaski | 49.9 | - | - | 38.3 | 5 | 61.5 | 8 |
| Clay | 50.2 | 48.3 | 13 | 52.1 | 14 | - | - |
| Allen* | 51.3 | 51.3 | 184 | 63.2 | 228 | 39.1 | 142 |
| Sullivan | 51.8 | 75.3 | 16 | 51.8 | 11 | 33.0 | 7 |
| Cass* | 51.9 | 66.8 | 26 | 43.9 | 17 | 51.9 | 20 |
| Decatur | 53.7 | 54.1 | 14 | 53.7 | 14 | 22.9 | 6 |
| Owen | 54.1 | - | - | 56.2 | 12 | 52.0 | 11 |
| Boone | 55.3 | 55.3 | 32 | 69.4 | 41 | 44.6 | 27 |
| Harrison | 56.3 | 89.2 | 35 | 51.1 | 20 | 56.3 | 22 |
| Crawford | 56.6 | 56.5 | 6 | 93.9 | 10 | 56.6 | 6 |
| Quartile 3 | | | | | | | |
| Wabash* | 58.6 | 61.0 | 20 | 58.6 | 19 | 40.2 | 13 |
| Franklin | 60.9 | 60.9 | 14 | 108.7 | 25 | 43.6 | 10 |
| Warrick | 62.4 | 62.4 | 29 | 71.2 | 43 | 52.5 | 32 |
| Lake | 63.1 | 65.7 | 325 | 63.1 | 311 | 51.5 | 253 |
| Starke | 64.7 | 60.3 | 14 | 64.7 | 15 | 68.9 | 16 |
| Monroe | 64.8 | 64.8 | 91 | 71.5 | 101 | 35.9 | 51 |
| Greene | 66.4 | 66.4 | 22 | 118.1 | 39 | 54.9 | 18 |
| Shelby | 67.6 | 67.6 | 30 | 78.9 | 35 | 44.9 | 20 |
| Rush | 70.5 | 40.4 | 7 | 75.9 | 13 | 70.5 | 12 |
| Perry* | 71.8 | 102.7 | 20 | 61.8 | 12 | 71.8 | 14 |
| Floyd | 73.1 | 81.4 | 61 | 73.1 | 55 | 71.0 | 54 |
| Ripley | 73.1 | 73.1 | 21 | 70.1 | 20 | 116.1 | 33 |
| Morgan | 73.4 | 66.5 | 46 | 85.2 | 59 | 73.4 | 51 |
| Jefferson* | 73.8 | 68.4 | 22 | 98.4 | 32 | 73.8 | 24 |
| Washington | 75.2 | 88.7 | 25 | 75.2 | 21 | 46.8 | 13 |
| Switzerland | 75.7 | 75.7 | 8 | 57.7 | 6 | 142.5 | 15 |
| Howard | 75.9 | 90.5 | 75 | 75.9 | 63 | 62.7 | 52 |
| Tipton | 76.0 | 75.7 | 12 | 76.2 | 12 | - | - |
| Grant | 84.0 | 91.9 | 64 | 62.1 | 43 | 84.0 | 58 |
| Clinton | 84.7 | 84.7 | 28 | 87.9 | 29 | 57.7 | 19 |
| Lawrence | 86.8 | 86.8 | 40 | 76.0 | 35 | 91.6 | 42 |
| Marion* | 87.9 | 94.0 | 856 | 87.9 | 807 | 54.3 | 504 |
| Montgomery | 89.2 | 140.8 | 54 | 86.4 | 33 | 89.2 | 34 |

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| | 3-year median case rate (per 100,000 population) | 2011 | | 2012 | | 2013 | |
| | | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases | Case Rate (per 100,000 population) | Reported Cases |
| Quartile 4 | | | | | | | |
| Madison* | 89.8 | 104.5 | 137 | 89.8 | 117 | 53.7 | 70 |
| LaPorte* | 90.9 | 98.0 | 109 | 90.9 | 101 | 55.7 | 62 |
| Brown | 92.9 | - | - | 92.9 | 14 | - | - |
| Union | 95.4 | 66.9 | 5 | 95.4 | 7 | 95.8 | 7 |
| Clark* | 96.6 | 91.5 | 102 | 99.1 | 111 | 96.6 | 109 |
| Martin | 107.5 | 116.6 | 12 | - | - | 98.4 | 10 |
| Miami* | 109.7 | 161.3 | 59 | 109.7 | 40 | 85.8 | 31 |
| Jackson | 110.5 | 142.1 | 61 | 106.9 | 46 | 110.5 | 48 |
| Vanderburgh | 116.2 | 136.5 | 246 | 116.2 | 210 | 83.2 | 151 |
| Dearborn | 116.5 | 115.8 | 58 | 166.5 | 83 | 116.5 | 58 |
| Randolph | 119.2 | 119.2 | 31 | 123.9 | 32 | 78.0 | 20 |
| Jay | 121.7 | 51.5 | 11 | 121.7 | 26 | 135.1 | 29 |
| Putnam* | 124.1 | 124.1 | 47 | 124.7 | 47 | 64.0 | 24 |
| Delaware | 129.5 | 91.7 | 108 | 130.4 | 153 | 129.5 | 152 |
| Henry* | 135.8 | 135.8 | 67 | 162.4 | 80 | 108.1 | 53 |
| Jennings | 141.9 | 141.9 | 40 | 141.9 | 40 | 74.3 | 21 |
| Vigo | 150.5 | 150.5 | 163 | 173.1 | 188 | 116.3 | 126 |
| Wayne | 179.5 | 156.9 | 108 | 190.2 | 103 | 179.5 | 122 |
| Blackford | 223.1 | 173.5 | 22 | 223.1 | 28 | 232.2 | 29 |
| Fayette | 250.4 | 302.1 | 73 | 250.4 | 60 | 213.9 | 51 |
| Scott | 259.9 | 267.3 | 64 | 176.1 | 42 | 259.9 | 62 |
| Hendricks* | 526.9 | 526.9 | 783 | 552.0 | 841 | 489.4 | 752 |
| Parke* | 1468.0 | 1413.3 | 242 | 1472.7 | 252 | 1468.0 | 253 |
| Indiana | 87.5 | 87.8 | 5719 | 87.5 | 5718 | 67.6 | 4445 |

*Includes cases reported from Indiana Department of Corrections facilities in these counties

**Annual rates for counties with suppressed cases (less than <5) were not calculated

***Hepatitis C case counts published by the state of Indiana include combined reported acute and chronic hepatitis C cases

Counties highlighted in yellow are those with supplemental indicators supporting SEP consideration. Counties with lower HCV rates and lower heroin dependence and use indicators should still investigate their prescription drug mortality rates to understand whether deaths were due to injection of prescription drugs. Prescription drug overdose mortality rate was included as a supplemental indicator for syringe exchange because of the 2015 Scott County HIV outbreak among Opana injecting drug users; and based on national trends of HCV among young, heroin injecting drug users who first used oral prescription opioid drugs. It is relevant only for communities who know that users are injecting prescription drugs. See Klevens RM, Hu DJ, Jils R et al. Clin Infect Dis 2012;55(S1):S3-9. These indicators are available by county from the Rural Center for AIDS/STD Prevention at Indiana University.